

SURGICAL TARGETING SYSTEMAbstract

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A device for providing a series of coordinates/
lines within a sheet of sterile, flexible material with
an adherent surface which is applied to the skin (after
suitable surgical preparation). The sheet is non-
5 porous and may have a topical antiseptic on the side
which is applied to the skin. A fluoroscope or
roentgenographic image of the portion of the body to
which the adherent film is applied will show the
underlying skeletal and radiopaque elements as well as
10 the overlying surgical grid. Once the device is
applied, the coordinates on the grid lines are clearly
visible on the surface of the skin as well as on the
fluoroscopic or radiographic image and by knowing the
direction of the fluoroscopic or radiographic beam, the
15 operator will be able to thereby correlate a specific
locus on the skin with an underlying skeletal element
or other underlying radiopaque structure. The
directional pathway between the two points is given by
the direction of the incident radiographic/
20 fluoroscopic beam. By disposing the surgical targeting
system on two opposite sides of the body or body parts,
two loci-one on the set near the receiving tube of the
fluoroscope (or the developing cassette or "film" of
the roentgenograph), and one set of coordinates
25 corresponding to the set on the opposite side of the
body or imaged body part, e.g., a limb can be utilized.
By noting the targeted zone's relationship to the
overlying near and far coordinates, their colinearity
can be taken advantage of by the operator for
30 targeting, since both far and near grid coordinates are

clearly visible on the surface of the patient's body. A third grid at right angles to the parallel far and near grids can be used to assess depth of advancement of the instrument or probe or biopsy tool to assure the
5 placement of the tip of the device in the target tissue (or implant or foreign body). It should be pointed out that the operator is not limited to one surgical corridor by this technique. Any number of potential surgical corridors can be located by varying the angle
10 of the incident fluoroscopic or x-ray beam and then noting the overlying far and near grid coordinates. By applying the device to the part of the body in a circumferential or nearly circumferential manner, and utilizing a radiolucent operating room table, and a C-
15 arm fluoroscope, the aforementioned targeting techniques can be utilized at surgery. Multiple targeting or percutaneous procedures can be performed at the same sitting with the application of a single device.

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